

CLAIMS

1. A dielectric resonator comprising:  
a dielectric resonance element; and  
a protrusion portion disposed in a direction  
perpendicular to the bottom surface of the dielectric  
resonance element, the protrusion portion integrally  
5 molded together with the dielectric resonance element,  
wherein the side face at the outer periphery  
of the protrusion portion is tilted such that the area  
on the bottom-surface side of the dielectric resonance  
10 element of the protrusion portion is larger than the  
area of the lower surface of the protrusion portion,  
and  
wherein the electromagnetic field used in the  
dielectric resonance element is in the TE<sub>01</sub>  $\delta$  mode.
2. A dielectric resonator as claimed in claim 1,  
wherein the whole side face at the outer periphery of  
the protrusion portion is tilted.
3. A dielectric resonator as claimed in claim 1  
or 2, wherein the bottom area of the dielectric  
resonance element is larger than the area on the  
bottom-surface side of the dielectric resonance  
5 element of the protrusion portion.

4. A filter comprising a plurality of dielectric resonators as claimed in any one of claims 1 to 3.

5. A duplexer comprising two filters as claimed in claim 4.

6. An oscillator comprising a dielectric resonator as claimed in any one of claims 1 to 3.

7. A communication device comprising at least one of a dielectric resonator as claimed in any one of claims 1 to 3, a filter as claimed in claim 4, a duplexer as claimed in claim 5, and an oscillator as  
5 claimed in claim 6.